UNITED STATES PATENT AND TRADEMARK OFFICE

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EDWARDS ANGELL PALMER & DODGE LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER
REPKO, JASON MICHAEL

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 June 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-11</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-11</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>15 January 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All   b)☐ Some *   c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   **Claims 1, 3, 4, 6, and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated**

by U.S. Patent No. 6,744,430 to Shimizu.

3.   With regard to claim 1, Shimizu discloses "a graphic processing apparatus (*Fig. 10*)

having

>   a.   a Z-buffer memory storing a Z value representing a depth of a display object
>
> when seen from a visual point per pixel (*lines 17-19 of column 19: "The Z value buffer*
>
> *234 stores pixel Z values for each layer prior to the receipt of the region determination*
>
> *results for each such layer.")* and
>
>   b.   a pixel memory storing color data on each pixel (*lines 17-19 of column 19: "A*
>
> *frame buffer processor 83 consolidates the color data determined by the shading*
>
> *processor 79 into separate frames, subjects those data to treatment (blending), and*
>
> *outputs images for one frame. A dedicated frame buffer RAM 70 provides working*
>
> *memory for the frame buffer processor 83 and stores frame data.")* for creating an image
>
> of a shadowed three-dimensional object having a shadow produced by obstructing a ray
>
> of light from a light source by the three-dimensional object (*Fig. 1*), comprising:

i.   a visual-point coordinate conversion processing section for upon input of

graphic data on normal polygons constituting each object including the three-

dimensional object and on shadow polygons constituting a shadow volume that

defines a shadow space produced by obstructing the ray of light from the light

source by the three-dimensional object (*lines 10-12 of column 6: "This light*

volume 3 is a virtual light space that is produced by the light source 1 and the

polygon (object) 2."; equation (1); Fig. 1; lines 24-26 of column 20: "In FIG.

26A, the triangular column a is described as an example of a shadow volume, and

the square column b as an example of a modifier volume."), converting the

graphic data to visual-point coordinates including x-coordinates and y-coordinates

and depth values (*lines 44-47 of column 17 (emphasis added): "The apex data are*

configured by <u>screen coordinates (x, y)</u> that indicate positions on the display

screen, <u>Z values that indicate depth</u>..."; Figure 11), and

ii.   outputting the obtained visual-point coordinates and depth values in a state

of being sorted into those of front-facing shadow polygons that face front, those

of back-facing shadow polygons that face back when seen from the visual point,

and those of the normal polygons (*lines 59-64 of column 17: "The sort*

preprocessor 110 sorts the pixel data sent from the pixel data generator 64,

according to Z value, and executes fragment Z buffer processing that extracts the

polygon ID closest to the front for each pixel, in each layer 1 to n as viewed from

the direction of the view point "; lines 12-14 of column 18: "The region buffer

controllers 120-1 to 120-n determine whether bound layer data input are a

volume polygon (shadow volume, modifier volume) or an ordinary polygon...";

lines 20-28 of column 18 (emphasis added): "The method adopted for updating

the region buffers...based on the results of volume polygon front/back

determinations..."); and

iii.   a hidden surface removal and shadowing processing section for obtaining

a coordinate region that is positioned behind the front-facing shadow polygons

and in front of the back-facing shadow polygons when seen from the visual point

based on the visual-point coordinates *(lines 49-51 of column 18: "The region*

buffers 220-1 to 220-n store information on whether something is inside or

outside a volume (region), pixel by pixel. "), the depth values and the Z-buffer

memory after hidden surface removal processing by Z-buffer method is

performed on the normal polygons *(lines 25-27 of column 21: "The sort*

preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each

pixel, layer by layer. "), and

iv.   updating color data on pixels in the pixel memory corresponding to the

obtained coordinate region to shadow color data *(lines 28-32 of column 17: "A*

frame buffer processor 83 consolidates the color data determined by the shading

processor 79 into separate frames, subjects those data to treatment (blending),

and outputs images for one frame. ").

4.   With regard to claim 3, Shimizu discloses "if a plurality of the shadow volumes are

present, the hidden surface removal and shadowing processing section performs processing

concerning the shadow polygons per shadow volume" *(lines 15-17 of column 18 (emphasis*

added): "When a <u>volume polygon</u> (<u>shadow volume</u>, modifier volume) has been input, the region

buffer controllers 120-1 to 120-n update the region buffers"; lines 20-23 of column 18 (emphasis

added): "The method adopted for updating the region buffers may be a method wherewith in and

out are inverted, in pixel units, <u>every time a volume polygon is input</u>..."; see also attribute

modulator B: lines 53-55 of column 18 and lines 59-61 of column 18).

5.   With regard to claim 4, Shimizu discloses "a graphic processing apparatus (*Fig. 10*)

having

    c.   a Z-buffer memory storing a Z value representing a depth of a display object

when seen from a visual point per pixel (*lines 17-19 of column 19: "The Z value buffer*

234 stores pixel Z values for each layer prior to the receipt of the region determination

results for each such layer.") and

    d.   a pixel memory storing color data on each pixel (*lines 17-19 of column 19: "A*

frame buffer processor 83 consolidates the color data determined by the shading

processor 79 into separate frames, subjects those data to treatment (blending), and

outputs images for one frame. A dedicated frame buffer RAM 70 provides working

memory for the frame buffer processor 83 and stores frame data.") for creating an image

of a shadowed three-dimensional object having shadows produced by obstructing a ray of

light from a light source (*1 shown in Figure 1*) by the three-dimensional object (*2 shown*

in Fig. 1), comprising:

        v.   a normal polygon conversion section for upon input of graphic data on

        normal polygons constituting each object including the three-dimensional object,

        converting the graphic data to visual-point coordinates including x-coordinates

and y-coordinates and depth values (*lines 44-47 of column 17 (emphasis added):*

"The apex data are configured by <u>screen coordinates (x, y)</u> that indicate positions

on the display screen, <u>Z values that indicate depth</u>..."; Figure 11);

vi.   a shadow polygon conversion section for upon input of graphic data on

shadow polygons constituting a shadow volume that defines a shadow space

produced by obstructing the ray of light from the light source by the three-

dimensional object (*3 shown in Fig. 1*),

     (1)   converting the graphic data to visual-point coordinates including x-

coordinates and y-coordinates and depth values (*lines 44-47 of column 17*

(emphasis added): "The apex data are configured by <u>screen coordinates</u>

<u>(x, y)</u> that indicate positions on the display screen, <u>Z values that indicate</u>

<u>depth</u>..."; Figure 11), and

     (2)   outputting the visual-point coordinates and the depth values in a

state of being sorted into those of front-facing shadow polygons that face

front when seen from a visual point and those of back-facing shadow

polygons that face back when seen from the visual point (*lines 59-64 of*

column 17: " The sort preprocessor 110 sorts the pixel data sent from the

pixel data generator 64, according to Z value, and executes fragment Z

buffer processing that extracts the polygon ID closest to the front for each

pixel, in each layer 1 to n as viewed from the direction of the view point.").

vii.   a normal polygon processing section for performing hidden surface

removal processing by Z-buffer method on the normal polygons based on the

visual-point coordinates and the depth values of the normal polygons (*lines 25-27*

of column 21: "The sort preprocessor (Z buffer) 110 outputs the polygon ID

positioned foremost for each pixel, layer by layer.") and updating color data and a

Z value of each pixel in the pixel memory and the Z-buffer memory based on the

processing result (*lines 25-27 of column 21: "The sort preprocessor (Z buffer) 110*

outputs the polygon ID positioned foremost for each pixel, layer by layer."; lines

28-32 of column 17: "A frame buffer processor 83 consolidates the color data

determined by the shading processor 79 into separate frames, subjects those data

to treatment (blending), and outputs images for one frame.");

viii.   a back-facing shadow polygon processing section for obtaining a

coordinate region positioned in front of the back-facing shadow polygons (*lines 9-*

11 of column 20 (emphasis added): "The triangular column a is defined by five

polygons, namely by a front surface a1, <u>back surface a2</u>..."; lines 25-27 of column

20: "In FIG. 26A, the triangular column a is described as an example of a

shadow volume..."; the operations of the region buffers for determining a region

for back surface a2 are illustrated Figures 29, 30, 31, 34, 37) when seen from the

visual point based on the visual-point coordinates (*lines 49-51 of column 18: "The*

region buffers 220-1 to 220-n store information on whether something is inside or

outside a volume (region), pixel by pixel."; lines 10-12 of column 18) and the

depth values of the back-facing shadow polygons and on the Z values after the

hidden surface removal processing is performed (*lines 22-29 of column 21: "Next,*

with a delineation start instruction...The sort preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each pixel, layer by layer.");

ix.   a shadow flag memory for storing a flag value representing a visual-point coordinate positioned in front of the back-facing shadow polygons (*lines 10-12 of column 18: "The region buffers 130-1 to 130-n store information (flags) as to whether something is inside or outside a volume (region)."*); and

x.   a front-facing shadow polygon processing section for obtaining a coordinate region positioned behind the front-facing shadow polygons (*lines 9-11 of column 20 (emphasis added): "The triangular column a is defined by five polygons, namely by a front surface a1, back surface a2..."; lines 25-27 of column 20: "In FIG. 26A, the triangular column a is described as an example of a shadow volume..."; the operations of the region buffers for determining a coordinate region for front surface a1 are illustrated Figures 29, 30, 31, 34, 37*) and in front of the back-facing shadow polygons when seen from the visual point based on the visual-point coordinates (*lines 49-51 of column 18*) and the depth values of the front-facing shadow polygons and on the Z values after the hidden surface removal processing is performed (*lines 22-29 of column 21*) and on the flag value and for updating color data on pixels in the pixel memory corresponding to the obtained coordinate region to shadow color data (*Fig. 44; lines 57-59 of column 22: "Because this region is inside volume ID_0, the light ID_1 for the relevant pixel(s) is invalidated, based on the volume data type shadow, and output is affected.""; lines 11-15 of column 23: "The pixel data for*

the polygon c described earlier pass through a layer controller 77 and attribute

modulator 78, and a pixel delineation such as diagrammed in FIG. 45 is made by

the shading processor 79, texture processor 80, and frame processor 83.").

6.   With regard to claim 6, Shimizu discloses "if a plurality of the shadow volumes are

present, the back-facing shadow polygon processing section and the front facing shadow polygon

processing section perform processing concerning the shadow polygons per shadow volume"

(*lines 15-17 of column 18 (emphasis added): "When a volume polygon (shadow volume, ·modifier*

volume) has been input, the region buffer controllers 120-1 to 120-n update the region buffers";

lines 20-23 of column 18 (emphasis added): "The method adopted for updating the region

buffers may be a method wherewith in and out are inverted, in pixel units, every time a volume

polygon is input...''; see also attribute modulator B: lines 53-55 of column 18 and lines 59-61 of

column 18).

7.   Claim 9 recites limitations similar in scope to those presented in claim 4 as a method.

Shimizu invention is embodied in a method as shown in line 10 of column 2. The limitations of

claim 9 are rejected with the rationale presented to reject the corresponding elements in the

apparatus disclosed in claim 4.

8.   With regard to claim 10, Shimizu discloses "the graphic processing apparatus as defined

in claim 4 running a graphic processing program causing a computer to function as the normal

polygon conversion section, the shadow polygon conversion section, the normal polygon

processing section, the back-facing shadow polygon processing section, and the front-facing

shadow polygon processing section (*lines 49-55 of column 15: "In the example diagrammed here*

in FIG. 20, however, a general purpose computer is used and image processing (geometry

processing, pixel data generation processing, pixel sorter processing, attribute alteration

processing, and rendering processing) is implemented by a software program or programs.").

9.   With regard to claim 11, Shimizu discloses "a program storage medium allowing

computer to read, characterized in that the graphic processing program as defined in claim 10 is

stored" (*lines 7-12 of column 16: "The recording media for providing the computer programs for*

executing the processing described in the foregoing include, in addition to such information

recording media as magnetic disks and CD-ROMs...").

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
        or nonobviousness.

12.   Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,744,430 to Shimizu in view of U.S. Patent No. 5,517,603 to Kelley et al.

13.   With regard to claims 2 and 5, Shimizu discloses the limitations of parent claims 1 and 4,

respectively, as well as "the Z-buffer memory and the pixel memory and shadow flag memory

have a capacity for one line in one display screen" (*lines 51-53 of column 13 (emphasis added)*:

"When it is determined in step S2 that all of the polygon pixel data for one frame have been

stored in the sort buffer 66, step S3 is advanced to..."). One of ordinary skill in the art would

recognize that if the memory has the capacity to store all of the data for one frame then clearly,

the memory has the capacity for one line of that frame. With regard to claim 2, Shimizu does not

expressly disclose "the visual-point coordinate conversion processing section and the hidden

surface removal and shadow processing section process per line." With regard to claim 5,

Shimizu does not disclose "the normal polygon conversion section, the shadow polygon

conversion section, the normal polygon processing section, the back-facing shadow polygon

processing section, and the front-facing shadow polygon section process per line."

14.   With regard to claims 2 and 5, Kelley et al discloses "the Z-buffer memory, the pixel

memory, and the shadow flag memory have a capacity for one line in one display screen (*lines*

24-26 of column 32: "FIG. 12 is a functional block diagram of a stage 2/3 processing unit. A

RAM 1201 and a RAM 1202 comprise the dual buffers and consist of one scanline of memory

each."; lines 63-66 of column 31: "When performing scanline Z-buffering or operating as a

compositing engine, both require at least one complete scanline of memory."), and "the visual-

point coordinate conversion processing section and the hidden surface removing (*lines 17-20 of*

column 15) and shadowing processing (*lines 47-50 of column 21; lines 4-7 of column 22*) section

processes per line," as recited in claim 2, and "the normal polygon conversion section (*lines 37-*

40 of column 14; lines 45-47 of column 14), the shadow polygon conversion section (*lines 39-45*

of column 21; lines 45-47 of column 14; lines 18-19 of column 24), the normal polygon

processing section (*lines 17-20 of column 15; lines 45-47 of column 15*), the back-facing shadow

polygon processing section (*line 65 of column 21 through line 2 of column 22*), and the front-

facing shadow polygon processing section (*lines 54-59 of column 21; lines 2-7 of column 22*)

process per line," as recited in claim 5 (*lines 66-67 of column 3: "In the scanline approach the 3-*

D image is rendered a scanline at a time, rather than an object at a time."; lines 10-13 of column

6: "Utilizing a scanline approach for rendering a 3-D graphical image, alternative rendering

device configurations provide scalable rendering performance."). While Kelley et al does not

use the language "<u>one line</u> of shadow flag memory," one of ordinary skill in the art would

recognize the system operates by performing the operations one scanline at a time, and computes

a shadow count for each pixel in each scanline from the statement lines 1-4 of column 22: "A

volume entirely in front of the pixel will generate one increment and one decrement <u>at that pixel</u>,

leaving the shadow count unchanged."

15.   At the time of the invention, it would have been obvious to a person of ordinary skill in

the art to perform the operations disclosed by Shimizu per line as taught by Kelley et al. The

motivation for doing so would have been to provide the system with the flexibility to process the

pixels out of order or in parallel. Kelley et al discloses the advantages of scanline independence

for "Parallel Rendering Pipelines" in lines 5-20 of column 37. Therefore, it would have been

obvious to modify Shimizu with the teachings of Kelley et al to obtain the invention specified in

claims 2 and 5.

16.   **Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.**

Patent No. 6,744,430 to Shimizu in view of U.S. Patent No. 6,402,615 to Takeuchi.

17.   With regard to claim 7, Shimizu shows the limitations of parent claim 4, but does not

show "a portable device." Takeuchi discloses a graphics system on "a portable device" (*lines 23-*

25 of column 22: "Further, it may also be realized using a mobile phone, portable data terminal,

car navigation system, or other communications terminal as a platform.").

18.   With regard to claim 8, Shimizu shows the limitations of claim 4 on which claim 8

depends, but does not show "a communication network." Takeuchi discloses "the portable device

is connectable to a communication network, and the graphic data is obtained through

communications via the communication network" (*lines 14-17 of column 5: "Specifically, for*

example, it is also possible to use the communications interface unit 109 to download the game

program from another piece of equipment, not shown, on the network connected through the

communications line 111").

19.   At the time of the invention, it would have been obvious to a person of ordinary skill in

the art to incorporate the graphics system disclosed by Shimizu on a mobile device that receives

graphical data over a network as taught by Takeuchi. The motivation for doing so would have

been to provide the user with the flexibility to view the graphical data at convenient location

while not overburdening the portable device with the storage requirement of the graphical data.

Therefore, it would have been obvious to combine Shimizu with Takeuchi to obtain the

invention specified in claims 7 and 8.

Response to Arguments

20.   Applicant's arguments filed 20 June 2007 have been fully considered but they are not

persuasive.

21.   It is unclear as to what the Applicant believes distinguishes the coordinate region in the

claims from Shimizu's coordinate region. Applicant alleges Shimizu does not teach the

limitation, then references and paraphrases the passages cited in the rejection, and concludes by

restating the original allegation without drawing any distinctions between the two features. In fact, when Applicant attempts to paraphrase the teachings of Shimizu in the fourth paragraph of page 3 of the remarks, Applicant restates line 25-27 of column 21 omitting a the key phrase: "layer by layer." It should be emphasized that the sort preprocessor does not merely output the polygon ID positioned in the front, but does so in each layer as described in lines 29-48 of column 20 and illustrated in Figures 32-34. It is important to note this aspect because the rejection of the claim at issue is based on the layer-by-layer processing described by Shimizu.

22.   In response to Applicant's assertion that Shimizu does not teach obtaining "a coordinate region positioned behind the front facing shadow polygons and in front of the back facing shadow polygons," it is submitted that a coordinate region is described by the pixel-by-pixel information (*lines 49-51 of column 18; lines 25-27 of column 21*) for at least the following reasons. Shimizu discloses pixel data is configured by the screen coordinates (*lines 52-55 of column 17*); therefore, the region information recorded in the buffer on a pixel-by-pixel basis defines a coordinate region. In the Shimizu reference, if a polygon is inside a volume, then it is behind the front facing shadow polygons and in front of the back facing shadow polygons relative to a viewpoint, and vice versa. Since a polygon inside a volume is described on a pixel-by-pixel basis (*lines 49-51 of column 18; lines 57-59 of column 22: "Because this region is inside volume ID_0, the light ID_1 for the relevant pixel(s) is invalidated, based on the volume data type shadow, and output is affected."; lines 10-12 of column 18: "The region buffers 130-1 to 130-n store information (flags) as to whether something is inside or outside a volume (region)."*), Shimizu discloses obtaining "a coordinate region positioned behind the front facing shadow polygons and in front of the back facing shadow polygons."

Conclusion

35.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. U.S. Patent No. 6,903,741 to Corbetta, U.S. Patent No. 6,897,865 to Higashiyama,

U.S. Patent No. 6,356,264 to Yasui et al and U.S. Patent No. 5,043,922 to Matsumoto disclose

generating shadows from a plurality of shadow volumes.

23.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jason M. Repko whose telephone number is 571-272-8624. The

examiner can normally be reached on Monday through Friday 8:30 am -5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMR

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER